

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. Claims 1-30 are now pending, claims 1 and 18 being independent. In this Reply, Applicants have amended claims 1, 17, and 18 and have added new dependent claims 29 and 30.

Rejection Under 35 U.S.C. § 112, Second Paragraph

Claim 17 stands rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. This rejection, insofar as it may pertain to the presently pending claims, is respectfully traversed.

As stated on page 3 of the Office Action, the Examiner asserts that the phrase "capacitors arranged in a zigzag pattern" in claim 17 is unclear. Although Applicants respectfully submit that such language is clear, particularly in light of the capacitor arrangement illustrated in FIG. 9, Applicants have amended claim 17 to specify that the capacitors are arranged in a pattern "in which adjacent capacitors are non-parallel, so as to diverge on one end." In light of this amendment, Applicants respectfully request that the rejection under 35 U.S.C. § 112, second paragraph be reconsidered and withdrawn.

Prior Art Rejections

Claims 1-12 and 18-28 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over *Gak et al.* (U.S. Patent

6,141,225, hereinafter referred to as "Gak") in view of *Gallios et al.* (U.S. Patent 4,893,227, hereinafter referred to as "Gallios").¹ Dependent claims 13-17 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over *Gak* in view of *Gallios*, and further in view of *Adasko et al.* (U.S. Patent 5,414,224, hereinafter referred to as "Adasko"). These rejections are respectfully traversed.

Independent claim 1 is directed to a high-voltage power supply. The high-voltage power supply of claim 1 comprises: a power scaling section receiving an input voltage signal and converting the input voltage signal to a controllable DC voltage; a push-pull converter for converting the controllable DC voltage to a high-frequency wave; and a voltage multiplier receiving the high-frequency wave generated by the push-pull converter and performing successive voltage doubling operations to generate a high-voltage DC output, the generated high-voltage DC output being varied as the controllable DC voltage varies. Therefore, as amended, claim 1 clearly requires that the power supply generate a variable high-voltage output, based on the controllable DC voltage generated by the power scaling section.

¹ Although the introductory paragraph of this rejection refers only to claims 1-12, Applicants have assumed for purposes of this Reply that claims 18-28 are also subject to this rejection because the Examiner has addressed these claims in the body of the rejection.

The primary reference, *Gak*, discloses a DC/DC converter having an input stage (buck circuit 11), which receives an input voltage V_{IN} and provides an output voltage V_{BUCK} . An output stage (push-pull circuit 13) receives V_{BUCK} and includes a high voltage transformer 15 to generate the desired output voltage. The *Gak* reference states at col. 1, lines 46-54 that:

With the converter according to this invention and operating as set-forth herein later, the optimal value for the relative phase shift is automatically obtained at the start-up of the converter and is then continuously adjusted during the operation thereof. A high output voltage (several thousands of volts) can be obtained and can be maintained constant even for relatively high fluctuations of the input DC voltage, e.g. fluctuations of between 30 and 50 volts.

Therefore, the DC/DC converter of *Gak* is arranged to generate a constant output voltage despite possible fluctuations of the input DC voltage. Consequently, *Gak* is not directed to an arrangement for a high-voltage power supply as recited in claim 1, in which a high-voltage DC output varies based on variations in a controllable DC voltage generated by a power scaling section. The Examiner's reliance on the secondary reference, *Gallios*, fails to make up for this deficiency.

The Examiner does rely on *Gallios* to assert that it would have been obvious to modify *Gak* to include a voltage multiplier for performing successive voltage doubling operations as claimed. Even with such a modification (assuming such a modification would have

been obvious, which Applicants do not admit), the DC/DC converter of *Gak* would still generate a constant output DC voltage. Furthermore, the rejection fails to identify a source of motivation in the applied references, or in the knowledge generally available to those skilled in the art, for modifying the DC/DC converter of *Gak* to include a voltage multiplier performing successive voltage doubling operations. The *Gak* reference includes a particular push-pull circuit 13, which includes a high voltage transformer 15, for generating the desired constant DC output voltage from V_{BUCK} . The Office Action fails to establish that there would be any benefit to incorporating successive voltage doubling operations in such an arrangement.

The Examiner's reliance on the additional secondary reference, *Adasko*, as allegedly teaching incremental features of certain dependent claims fails to address the deficiencies of the *Gak-Gallios* combination stated above.

To establish *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art and the asserted modification or combination of prior art must be supported by some teaching, suggestion, or motivation in the applied reference or in knowledge generally available to one skilled in the art. *In re Fine*, 837, F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Thus, "[a]ll words in a claim must be considered in judging the patentability of that

claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). The prior art must suggest the desirability of the modification in order to establish a *prima facie* case of obviousness. *In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1995). It can also be said that the prior art must collectively suggest or point to the claimed invention to support a finding of obviousness. *In re Hedges*, 783 F.2d 1038, 1041, 228 USPQ 685, 687 (Fed. Cir. 1986); *In re Ehrreich*, 590 F.2d 902, 908-09, 200 USPQ 504, 510 (CCPA 1979).

At least for reasons stated above, Applicants respectfully submit that the Office Action has failed to establish *prima facie* obviousness of claim 1, or any claim depending therefrom. Independent claim 18, and claims depending therefrom, define over the asserted combinations based on similar reasoning to that set forth above with regard to claim 1.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the Examiner's rejections under 35 U.S.C. § 103.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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